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ABSTRACT

This paper, one of three related documents, examines statewide trends in the distribution of staff in the Michigan public schools. Along with its related documents, it provides a basis for analyzing the impact of state financing mechanisms and funding levels on the overall distribution of resources throughout the state and on the resource allocation and programmatic decisions of the individual school districts. This paper begins with a breakdown of aggregate staffing and staffing ratios and concludes with a discussion of educational equity, equality, and excellence. Graphs and tables are included. (Author/LD)

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SCHOOL FINANCE PROJECT

Working Paper #1

STAFF ADEQUACY IN MICHIGAN PUBLIC SCHOOLS

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SCHOOL FINANCE PROJECT

Working Paper #1

Staff Adequacy in Michigan Public Schools

I. Introduction

School finance reform, in recent years, has been motivated by a desire to improve the equity and equality of educational opportunity and foster the pursuit of excellence. A critical issue facing the reformers involves the selection of operational measures with which to assess a school system in terms of these goals. This issue is particularly difficult to resolve, given the current lack of evidence of a significant statistical relationship between student achievement and various measures of school resources.

Despite this lack of evidence, staffing ratios are generally perceived by professionals and by the general public as a good measure of school program quality. Accordingly, this working paper will examine state-wide trends in broad staffing categories in Michigan public schools and will interpret these trends in terms of the concepts of equity, equality and excellence.

It must be noted, however, that staff adequacy is only one of several reasonable measures of school program quality. A related measure, and the subject of a second working paper, is program adequacy -- the distribution of staff by program assignment (e.g., administration, math teaching, language arts teaching, etc.). A third working paper will address school district revenues and expenditures.

This paper, together with the additional working papers noted above, will provide a basis for analyzing the impact of state financing mechanisms and funding levels upon the overall distribution of resources throughout the state

and upon the resource allocation and programmatic decisions of the individual school districts. The distribution of these resources will be evaluated in terms of the normative concepts noted above -- equity, equality and excellence. Thus, the research agenda may be summarized in terms of the following diagram:

Subject/Resource Measure		Normative Criteria
1. Staff Adequacy	X	a. Equity
2. Program Adequacy	X	b. Equality
3. Revenues & Expenditures	X	c. Excellence

II. School District Staffing Levels

A. Aggregate Staffing

The Michigan public school work force increased sharply between the 1973-74 school year and 1974-75, declined somewhat in 1975-76 and 1976-77, increased sharply in 1977-78, and declined again in 1978-79. The 1976-77 decline occurred primarily among instructional personnel, both professional and nonprofessional, and coincided with a general economic decline in Michigan. During this period, the state's unemployment rate rose to 10.2 percent, or 1-1/2 times the national rate. The decline experienced in 1978-79 occurred primarily among professional instructional staff and generally followed the trend of declining enrollments. Staffing ratios remained unchanged. Total growth in the public school work force over this five-year period was 7.4 percent.

A detailed breakdown of these trends by specific personnel categories is presented in Appendix A. To begin an examination of these trends, however, it is convenient to consider the following general staffing

categories:

(1) professional instructional personnel

(2) nonprofessional instructional personnel

(3) professional noninstructional personnel

(4) nonprofessional noninstructional personnel.

Growth in the school work force may be summarized in terms of these categories as follows:

Table I: Growth in Public School Work Force, 1973-74 to 1978-79

	Instructional	Noninstructional	Total
Professional	968 (0.9%)	2,356 (67.4%)	3,324 (3.1%)
Nonprofessional	2,070 (12.6%)	7,168 (15.1%)	9,238 (14.5%)
Total	3,038 (2.5%)	9,524 (18.7%)	12,562 (7.4%)

As the data indicate, the largest growth in instructional staffing has occurred in the nonprofessional categories, which include teacher aides (up 19%), library aides (up 12.1%) and clerical aides (up 1.4%). This may be contrasted to a negligible increase of 0.9% in professional instructional staff over the same five-year period. Although the precise reason for this imbalance in instructional staff growth is not known, it may reflect a shift in instructional strategy or a cost-containment effort.

While the growth in instructional personnel has occurred largely in the nonprofessional sector, most of the growth in the noninstructional area has apparently occurred in the area of professional personnel. However, the data, which indicate a 67.4% increase in this category are no doubt largely attributable to the new staffing category definitions instituted

with the revised school district staffing reports (DS-4061) for school year 1977-78.

The 15.1% increase in the nonprofessional, noninstructional category consists of a 9.8% increase in food service personnel, an 11.2% increase in transportation personnel--primarily school bus drivers--and a 19.4% increase in an "other" category which includes custodians, maintenance staff, and secretarial and clerical workers not included elsewhere in the report.

B. Staffing Ratios

The trends in public school staffing levels may be viewed more clearly in terms of staffing ratios, which indicate relative changes in both staffing and enrollments. These ratios are presented for general staffing categories in Table III below. When presented in this way, the data more clearly underline the considerable growth in noninstructional professional staff, including administrators, health personnel, social workers and attendance personnel. Again, however, a portion of this increase is attributable to new staffing categories instituted with the 1977-78 school district staffing reports.

In terms of staff/pupil ratios, the data indicate a rate of growth among nonprofessional staff (25.4 percent) which is approximately twice that of professional staff (13.0 percent). Among the nonprofessional staffing categories, instructional and noninstructional staff have increased at about the same rate (23.4 percent and 26.2 percent, respectively) during the past five years. In contrast, growth among the professional staffing categories has varied considerably over this period, with the increase in noninstructional staff exceeding the growth in instructional staff by a considerable margin (83.3 percent and 10.6 percent, respectively).

Table III: SCHOOL DISTRICT STAFF PER 1,000 PUPILS

Staffing Category	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	Change	Percent
All Professional-Instructional	47.73	50.75	48.92	48.76	52.50	52.80	+5.07	+10.6%
-Classroom Teachers (K-12)	42.06	44.04	42.17	42.01	45.92	46.06	+4.00	+ 9.5%
All Professional-Noninstructional	1.62	1.77	1.84	1.87	2.81	2.97	+1.35	+83.3%
ALL PROFESSIONAL STAFF	49.35	52.53	48.92	50.62	55.31	55.77	+6.42	+13.0%
All Nonprofessional Instructional	7.61	8.42	9.12	8.94	8.88	9.39	+1.78	+23.4%
All Nonprofessional-Noninstructional	21.98	22.81	23.82	24.41	26.83	27.73	+5.75	+26.2%
ALL NONPROFESSIONAL STAFF	29.59	31.23	32.94	33.35	35.72	37.12	+7.53	+25.4%
ALL INSTRUCTIONAL STAFF	55.34	59.18	58.04	57.70	61.38	62.19	+6.85	+12.4%
ALL NONINSTRUCTIONAL STAFF	23.60	24.58	25.66	26.28	29.65	30.70	+7.10	+30.1%

III. Summary and Conclusions

The following general trends emerge from the analysis presented above:

(1) The school district work force increased (7.4 percent) over the last six school years despite a decline in enrollments (8.8 percent). During this period, total instructional staff increased marginally (2.5 percent), while noninstructional staff increased substantially (18.7 percent).

(2) In terms of staff/pupil ratios, nonprofessional staff have increased approximately twice as much as professional staff (25.4 percent growth vs. 13.0 percent, respectively).

(3) Among professional staff, noninstructional personnel have increased at a greater rate than instructional staff. However, the great difference suggested by the data (83.3 percent increase in noninstructional staff vs. 10.6 percent increase in instructional staff) is largely attributable to the department's redefinition of personnel categories.

(4) The ratio of classroom teachers per 1,000 pupils has increased 9.5 percent over this five-year period. (Data limitations preclude analysis by elementary grades, secondary grades, etc.)

(5) The growth in nonprofessional staff has been roughly equal between instructional and noninstructional personnel (23.4 percent and 26.2 percent, respectively).

(6) Local school districts have increased the number of teacher aides by 19 percent over this five-year period, while decreasing classroom teachers by 0.1 percent. In terms of staff/pupil ratios, nonprofessional instructional staff have increased by 23.4 percent over this five-year period, as compared with the 9.5 percent increase in classroom teachers over this same period.

With the exception of the increased size of special education programs, these trends are presumably the result of decisions by local school districts regarding the use of general (i.e., noncategorical) resources. Obvious questions which arise regarding these trends and the state-local system of finance and administration under which they have arisen include:

(1) Do the trends represent the preferences of local school districts or constrained economic choice?

(2) What types of communities (as indicated, perhaps, by census data) are allocating resources in this way and which are not?

(3) Are these trends desirable? Should they be curbed or fostered?

Obviously, answers to these general questions require political choices as to the desired trends and much more research, concentrating upon the probable impact of policy variables--those under the control of the local school districts or the state--upon resource allocation. Relevant policy issues which should be addressed in subsequent working papers include:

(1) The impact of state financing mechanisms and support levels upon the staffing decisions of local school districts; (e.g., Should the state decrease the amount of general membership aid given to the districts and increase the amount of categorical aid in order to influence staffing decisions?)

(2) The programmatic effects of changes in funding mechanisms and service mandates; (e.g., How do the requirements of categorical programs constrain or alter local school district decisions about staff composition and student placement? Should the state consider alternative financing mechanisms such as mandated programs or budget approval in order to equalize programs across districts or across pupil groups -- e.g., bilingual, handicapped, disadvantaged?)

IV. Equity, Equality, and Excellence: Alternative Concepts in School Finance

While the limited findings presented above cannot serve as a basis from which a comprehensive research agenda can be developed, the findings do raise follow-up questions which can be systematically organized and explored. For example, accepting the widely-held argument that staffing ratios do provide a measure of educational program quality, an inter-district analysis of staffing ratios should be undertaken and the results evaluated in terms of possible goals regarding the distribution of resources across local districts.

What are these goals? Three alternatives are conceptualized in Table V below. Each alternative is distinguishable from the other two and each suggests a different interpretation of empirical findings:

(1) Equity (or Fiscal Neutrality) -- Obviously the concept of equity cannot be authoritatively defined solely on the basis of objective criteria. Reliance upon value judgments is inescapable and two related value judgments will be adopted here. The first is the long-standing principle that government should ordinarily leave decision-making and administration to the smallest unit of society competent to handle them. This principle, which is a cornerstone of our federal system of government, is applied to the issue of public school finance in Private Wealth and Public Education, by Coons, Clune and Sugarman. In their analysis, the authors assign to this principle the label subsidiarity and sharpen its definition: "Subsidiarity. . . implies at least the power of localities to decide (a) how much education they desire (perhaps within minimums and maximums set by the state) and (b) how much they are willing to spend to reach their goals. It is this outlook toward public education which permits some localities to spend more than others; it is a source of one

Table V

DISTRIBUTION IN PUBLIC SCHOOL FINANCE: ALTERNATIVE CONCEPTS

CONCEPT	DEFINITION	MEASUREMENT	FOCUS OF CONCERN	PRIMARY ADVANTAGES	PRIMARY DISADVANTAGES
A. Equity (Fiscal Neutrality)	The wealth of a school district is not associated with noncategorical primary and secondary school expenditures in that district.	The correlation coefficient relating school district wealth to school expenditures is insignificant. Sensitivity of coefficient to alternative definitions of wealth must be identified. Relationships between district and school services-student outcomes will be explored.	Dependence of school expenditures on district wealth.	Equal access to educational resources; promotes local fiscal autonomy.	Educational expenditures depend upon voters' preferences; wealthy might desert public schools.
B. Equality	Service variables are equalized across local school districts. Equality could also be defined in terms of expenditures per student or in terms of outcomes.	The variance of the distribution of the selected service variables across local districts is near zero.	Disparities in service levels across local districts.	Equal service levels for equivalent student groups. Expenditures per student equated across districts thru adjustment for "cost of doing business."	Interference with local fiscal autonomy.
C. Excellence/Adequacy	Each local school district is performing at or above a specified level and is encouraged to go beyond this level.	Standard may be expressed in terms of: expenditures per pupil; service levels per pupil; or pupil achievement.	Inadequate resource levels and/or pupil achievement in some local districts.	System-wide access to a guaranteed level of resources.	Interference with local fiscal autonomy; does address inequality of services/outcomes across local districts

kind of inequality."[1]

The authors point out, however, that while subsidiarity does not guarantee equality of school programs across local districts, neither does subsidiarity prohibit it. Rather, subsidiarity is entirely compatible with the notion of equal educational opportunity -- that is, the notion that each local district is free to choose their desired level or quality of educational program, constrained not by its own school district wealth but solely by the wealth of the state as a whole.

As a way in which to put this principle into effect, the authors pose the following reform:

> "Equal district power is the key. The concrete financing proposal may be stated thus: equal tax rates should provide equal spendable dollars. That is, the local unit would be empowered to fix the tax rate (effort) to be imposed upon a specific class of local wealth. For every level of local tax effort permitted by statute, the state would have fixed the number of dollars per task unit (probably per pupil) that the district would be empowered to spend. The state also guarantees that this number of dollars will be available to the district."[2]

Thus, the authors construct their argument upon the premise that expenditures are the appropriate measure of quality. However, as noted above, school staffing levels are an alternative measure of educational program quality and can be used as the yardstick with which to assess the equity of a state school system. That is, a school system would be equitable to the extent that no significant statistical relationship exists between school district wealth and school district staffing ratios. The measurement of equity in Michigan school finance involves the calculation of correlation coefficients relating these two variables.

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[1]Coons, Clune and Sugarman, Private Wealth and Public Education, Harvard University Press, (Cambridge: 1970), p. 16.

[2]Coons, et al., p. 34.

How are these variables to be measured? The appropriate measure of school district wealth would be SEV per pupil, the basis for state school aid in Michigan. The selection of a "best" measure of staff adequacy is somewhat more problematical since no widely-accepted benchmark currently exists. Selection, therefore, was based upon the following three criteria:

(1) The measure should represent a wide range of instructional services.

(2) The measure should not include staff engaged in categorical programs and services.

(3) The measure should not include staff engaged in noninstructional programs and services.

Following a preliminary screening of a number of alternative measures of staff adequacy, three measures were identified as possibly meeting these criteria. The specific characteristics of these variables are outlined in Table VI below. Based upon the above criteria, the "ratio of total instructional (noncategorical) and instructional support" was selected as the best indicator of staff adequacy and will generally be used as the sole measure throughout the remainder of this study. As such, this measure excludes categorical instructional staff and all noninstructional personnel, both professional (e.g., administrators, business officials) and nonprofessional (e.g., food service staff, operation and maintenance staff). Data are for the 1977-78 school year.

Correlation coefficients relating school district SEV per pupil to several measures of staffing level, including the best measure, are presented in Table VII below. Separate coefficients are calculated for five district groups defined in terms of wealth in order to identify that group for which fiscal neutrality, as here defined, has been achieved.

Table VI

CHARACTERISTICS OF STAFF ADEQUACY MEASURES

Criteria	Variable:	Is Sub-unit Included? 6	4	5	Correlation 6	4	5
Does It Represent a Wide Range of Instructional Services?							
1. Ratio Professional Instructional		Yes	Yes	Yes	.75	.89	.81
2. Ratio Professional Instructional Support		Yes	No	Yes	.49	.52	.54
3. Ratio Non-Professional Instructional Instructional Support		Yes	No	Yes	.71	.21[1]	.69
4. Ratio Professional (non-categorical) Instructional		Yes	Same	No	.83	1.00	.79
5. Ratio Total Instructional/Instructional Support		Yes	No	Same	.96	.79	1.00
6. Ratio Total Instructional (non-categorical) Instructional Support		Same	No	No	1.00	.84	.96
Is It Separate From Categorical Services?							
7. Ratio Professional Categorical Instructional		Yes	Yes	No	.05	.00	.33[2]
8. Non-Professional (not available)		No	No	No	N/A	N/A	N/A
Is It Separate From Non-Instructional Services?							
9. Ratio Non-Instructional Support		Yes	Yes	Yes	.27	.28	.28

[1] Judged to be too low

[2] Judged to be too high

Table VII

Correlation Coefficients Between Measures of School District Staffing and District SEV per Pupil 1977-78 (K thru 12 districts only)

Staffing Measures	Districts with SEV per Pupil less than:						
	40,000	45,000	50,000	55,000	60,000	SEV > $55,000	Statewide
Professional Instructional (non-categorical)	-.06	-.09	-.05	.07	.14	.41	.39
Professional Instructional Support	.00	-.02	-.01	.00	.08	.07	.16
Nonprofessional Instructional and Instructional Support	-.14	-.13	-.12	-.11	.03	.03	.07
All District Staff	-.05	-.07	.00	.05	.14	.25	.30
All Instructional and Instructional Support (non-categorical)	-.13	-.14	-.11	-.02	.07	.35	.32
	N = 427	N = 448	N = 469	N = 485	N = 499	N = 45	N = 530

Coefficients are also calculated for the group of districts falling outside the impact range of the state-aid formula and for the state as a whole.

As the coefficients indicate, Michigan's system of school finance has achieved a largely wealth-neutral distribution of school district staff for those K through 12 districts which are at or below $55,000 SEV per pupil. (These districts are 485 in number and account for 1,910,676 pupils, or 94.4 percent of the total membership in Michigan.) The coefficients for each of the staffing measures are near zero, indicating very little relationship between staffing and the selected measure of school district wealth. Significantly, the correlation coefficient associated with the "best" staffing measure is closest to zero (-.02) for this group of districts.

The system is clearly not neutral, however, either for those districts above $55,000 SEV per pupil or for the state as a whole. While the districts over $55,000 SEV are only 45 in number (accounting for only 5.6 percent of total state membership), their effect upon the measure of wealth neutrality for the entire state is significant. With the inclusion of these districts in the analysis, the correlation coefficient increases to .32, indicating a significant relationship between staffing and district wealth. This finding of wealth (or fiscal) neutrality for the in-formula districts and the absence of neutrality for those out-of-formula suggests two policy options which might achieve neutrality on a statewide basis: (a) raising the guarantee level of the general membership aid formula; or (b) creating a "recapture" mechanism for districts over $55,000 SEV. These policies may be advisable, that is, if equity--or fiscal neutrality--is the goal.

(2) Equality -- The concept of equality simply requires that educational resources (e.g., expenditures, staffing levels, or school programs) be distributed in equal amounts across local school districts. This concept is based upon a "leveling", or "leveling up" philosophy which holds that education is so valuable a commodity that all local school districts should consume it in equal amounts. As such, this concept runs counter to the notion of subsidiarity, or local control, a notion that is central to the concept of equity. While equity implies equal opportunity of local school districts to decide upon and deliver the level of educational services they desire, it does not imply equal program across districts. Equity ensures local choice, including the choice of differing from other districts. Equality would restrict this choice.

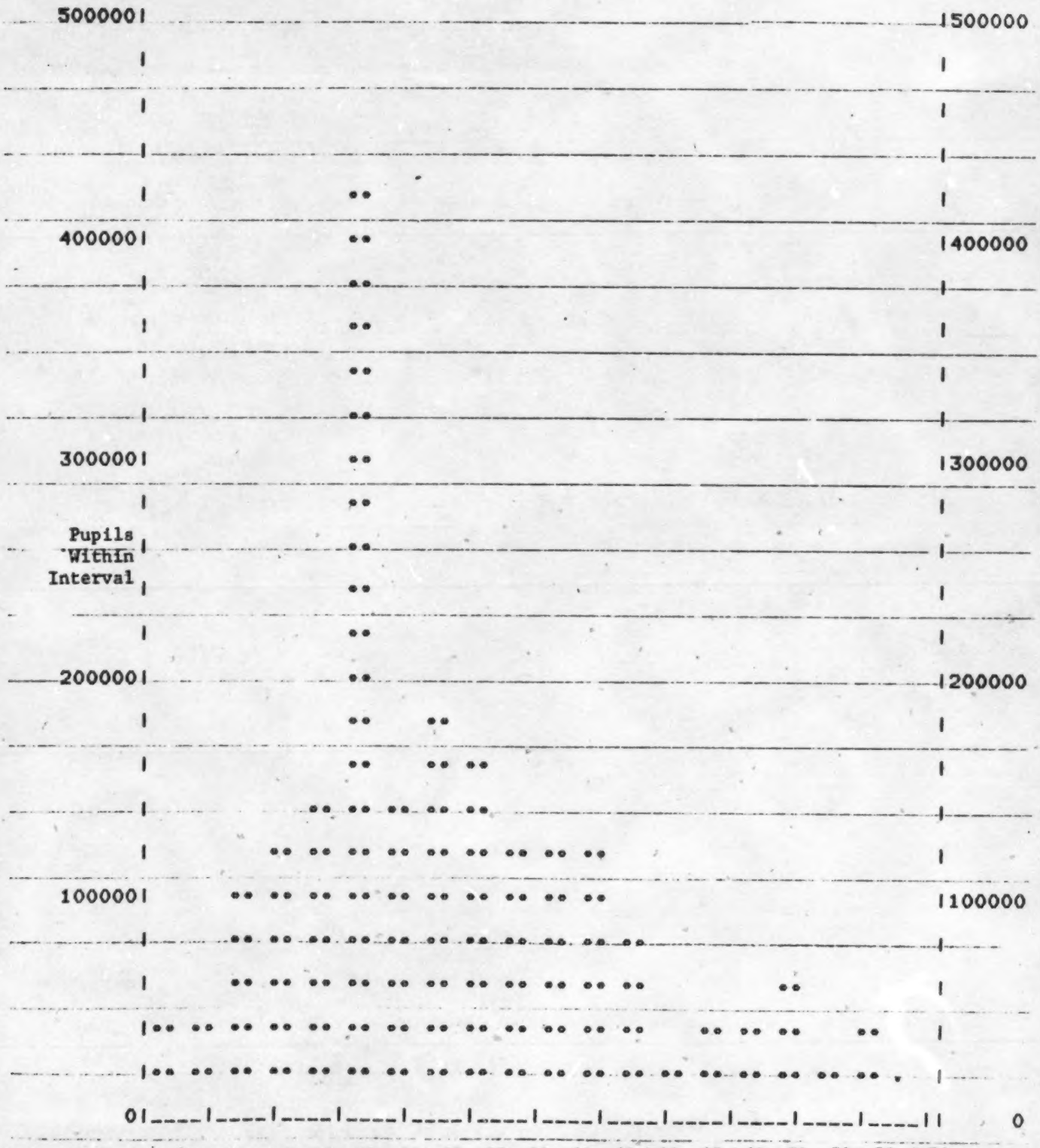
The degree of equality in the distribution of resources across local districts is indicated by the variance of that distribution. That is, the existence of any variance in the distribution would indicate inequality. The degree of equality in the distribution of non-categorical instructional and instructional support staff across local school districts in Michigan may be seen from the following frequency table and histogram:

TABLE VIII

Frequency Table: Pupils by Staffing Level

Interval	Staff Per Thousand Pupils	Pupils Within Interval
1	less than 42.00	32,293
2	42.00 - 43.99	40,476
3	44.00 - 45.99	94,767
4	46.00 - 47.99	119,250
5	48.00 - 49.99	145,144
6	50.00 - 51.99	410,555
7	52.00 - 53.99	143,272
8	54.00 - 55.99	170,511
9	56.00 - 57.99	159,676
10	58.00 - 59.99	126,233
11	60.00 - 61.99	124,651
12	62.00 - 63.99	119,739
13	64.00 - 65.99	73,741
14	66.00 - 67.99	16,491
15	68.00 - 69.99	47,244
16	70.00 - 71.99	33,348
17	72.00 - 73.99	52,894
18	74.00 - 75.99	22,796
19	76.00 and over	40,914

Figure 2. Frequency Histogram; Pupils by Staffing Level



While the histogram indicates a large number of pupils in districts with between 50 and 52 staff per thousand pupils, the data clearly reflect an absence of equality in the distribution of staff across school districts in Michigan. The considerable variance in staffing levels reflects, for the most part, different levels of demand for non-categorical instructional and instructional support staff on the part of the local districts. Since local school districts in Michigan are free to set their own school millage rate, the absence of equality is not surprising.

An important question, however, concerns the underlying reasons for the variance across the districts in the distribution of this key indicator of program quality. Do local school district programs vary in quality because the districts differ in wealth and, therefore, in their ability to support school programs; or, do the programs differ because some districts value these resources more and are willing to tax themselves at a higher rate in order to purchase them? In view of the negligible correlation between wealth and staffing ratio for districts below $55,000 SEV per pupil, variations in wealth can be ruled out as a causal factor. (The identification of these causal factors is a complex matter and will be taken up in a subsequent working paper.)

Wealth differences, however, cannot be ruled out for the districts over $55,000 SEV per pupil since the correlation between wealth and staffing ratio was fairly high. (This group consists of out-of-formula districts -- that is, districts having relatively high SEV per pupil which made them ineligible for general membership state aid.* We can compare the distribution

*The $55,000 "cutpoint" was selected on the basis of the wealth neutrality measure (correlation coefficient). It is not a precise cutpoint between the in-formula and out-of-formula districts. Rather, it is somewhat higher. For example, a district with $48,200 SEV per pupil and levying 20 mills for schools would have been at the cutpoint of the 1977-78 formula. As the millage rose, the cutpoint dropped -- e.g. $46,308 for 26 mills and $45,467 for 30 mills.

of staff across districts within SEV groups in terms of Table IX and Figures 3.A., 3.B., and 3.C., below. In addition to the $55,000 SEV cutpoint, a $40,000 SEV cutpoint was applied to the "wealth neutral" group (below $55,000 SEV per pupil) in order to illustrate a difference in staff distribution between these "subgroups". Again, while $40,000 SEV per pupil is not a precise cutpoint derived from the 1977-78 general membership aid formula, it does divide the below $55,000 districts into subgroups which have markedly different staff distributions.

These profiles provided in Table IX reveal a positive relationship between SEV per pupil and staffing ratio across the three district groups. The higher the SEV per pupil in the district group, the smaller the proportion of pupils in that group in districts of less than a given staffing ratio, on average. The wealthier the district group, the smaller the proportion of students in districts with an average staffing level below the specified level. For example, while 53.4 percent of the pupils in districts with less than (or exactly at) $40,000 SEV per pupil are in districts with less than 54 staff per 1,000 pupils, only 33.7 percent of the pupils in the $40,000 to $55,000 SEV group are included in this staff measure interval, and only 15.4 percent of the pupils in the districts over $55,000 SEV.

These trends are illustrated in Figure 4 below. Each district group is represented by a separate curve relating staffing level to SEV per pupil. The steeper the curve, the lower the staffing levels. That is, the steeper the curve, the higher the percentage of pupils in that group that are in local districts at or below a given staffing level. The curve for the below-$40,000 group lies almost entirely to the left of (i.e., is steeper than) the curve corresponding to the $40,000 to $55,000 group. The curve

Table IX

SUMMARY COMPARISON OF DISTRICT GROUP STAFFING LEVELS

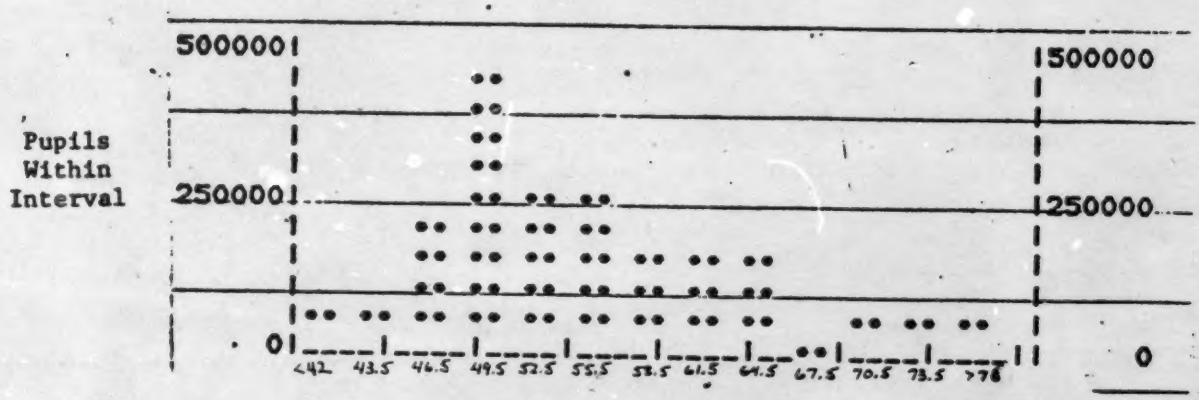
Percent of Pupils Below the Indicated Staffing Level

Staffing Less Than:	Districts ≤ $40,000*	Districts Between $40,000 and $55,000*	Districts > $55,000*
45 per 1,000 pupils	5.4%	1.5%	0.2%
54 per 1,000 pupils	53.4%	33.7%	15.4%
63 per 1,000 pupils	83.0%	81.3%	55.4%
72 per 1,000 pupils	94.2%	99.2%	78.5%
	N = 448	N = 67	N = 62
	$\bar{X}$ = 56.83	$\bar{X}$ = 57.52	$\bar{X}$ = 68.55
	σ = 11.05	σ = 12.49	σ = 19.62

* SEV per Pupil

Figure 3 A

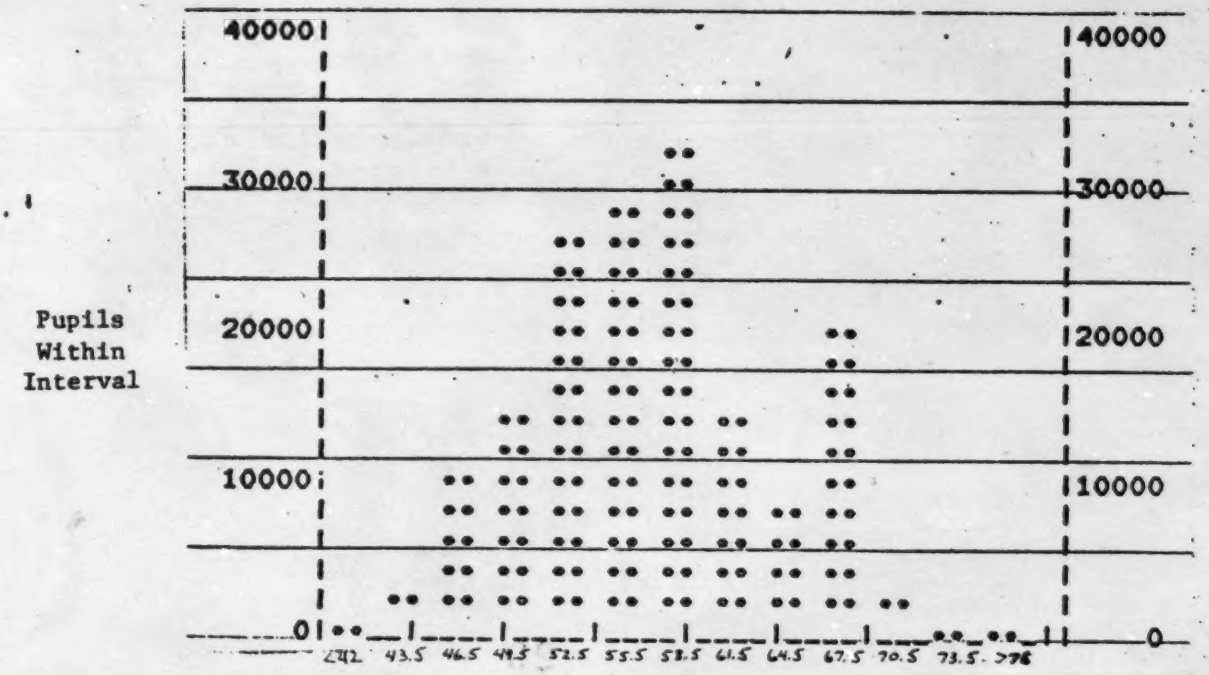
Districts of Less Than $40,000 Per Pupil



Staff per 1,000 pupils
(interval mid-points indicated)

Figure 3 B

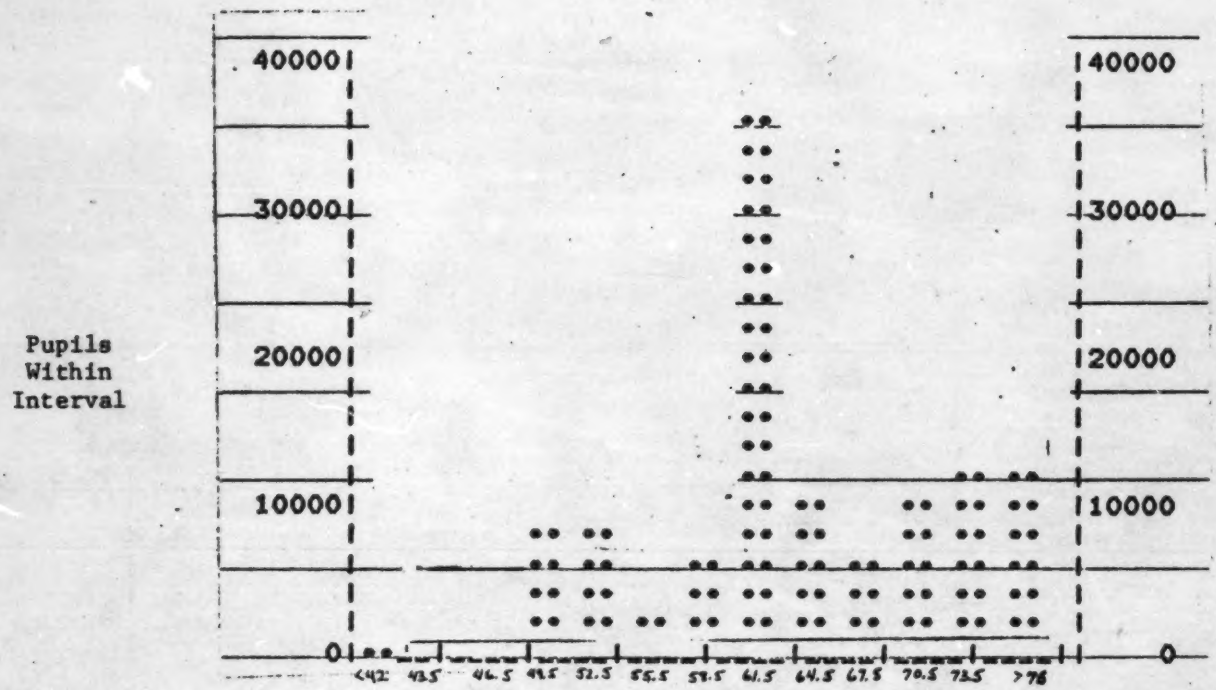
Districts Between $40,000 and $55,000 SEV Per Pupil



Staff per 1,000 pupils
(interval mid-points indicated)

Figure 3 C

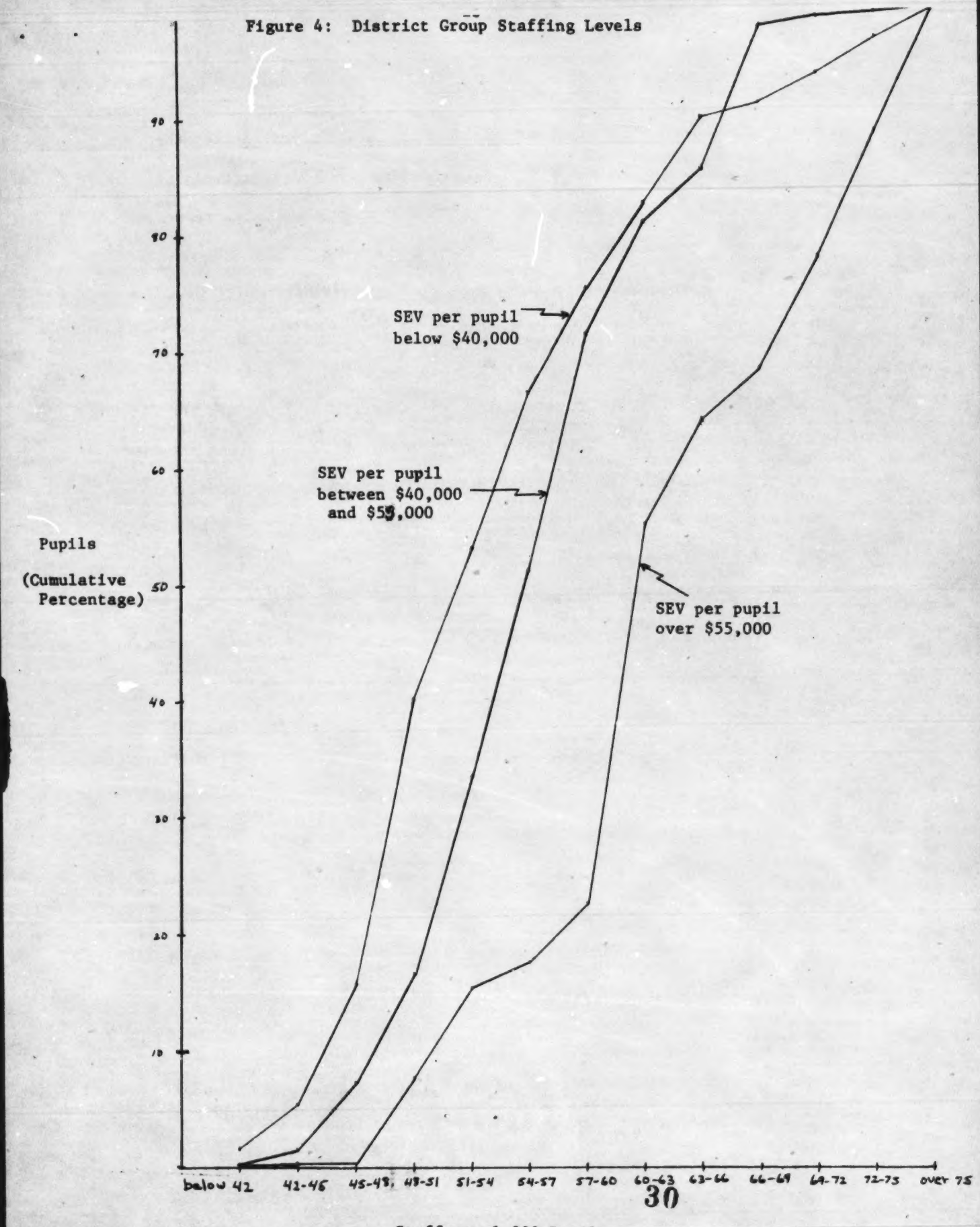
Districts of More Than $55,000 SEV Per Pupil



Staff per 1,000 pupils

(interval mid-points indicated)

Figure 4: District Group Staffing Levels



for the over $55,000 group lies considerably to the right of the other two, indicating significantly higher staffing levels in this relatively wealthy school district group. The data from which these curves were drawn are presented in Appendix B, "Staffing Level Frequencies."

Finally, this trend is also evident from the histograms (Figures 3.A., 3.B., and 3.C., above). The distribution of pupils in the below $40,000 SEV group is positively skewed (i.e., more pupils on the low side of the staffing measure), while a more normal distribution is found for the $40,000 to $55,000 SEV group, and a negatively skewed distribution among the over $55,000 SEV group. These results are not surprising given the positive correlation between SEV per pupil and staffing ratio of .32 for Michigan's 530 K through 12 districts, reported in Table IV above.*

In summary, the data indicate that Michigan's equal yield general membership aid formula has succeeded in achieving an equitable (i.e., wealth neutral) distribution of non-categorical instructional and instructional support staff in the 485 districts (accounting for approximately 94 percent of the student population) at or below $55,000 SEV per pupil. The distribution, however, is clearly not equal over this range.

(3) Excellence -- The concept of excellence would apply to an educational system in which each local unit is endowed with at least a prescribed level of resources which would constitute more than a minimum level. In addition, each school district would have the opportunity to go beyond the prescribed level. Thus, a floor would be imposed below some measure(s) of program quality but no ceiling would be placed above.

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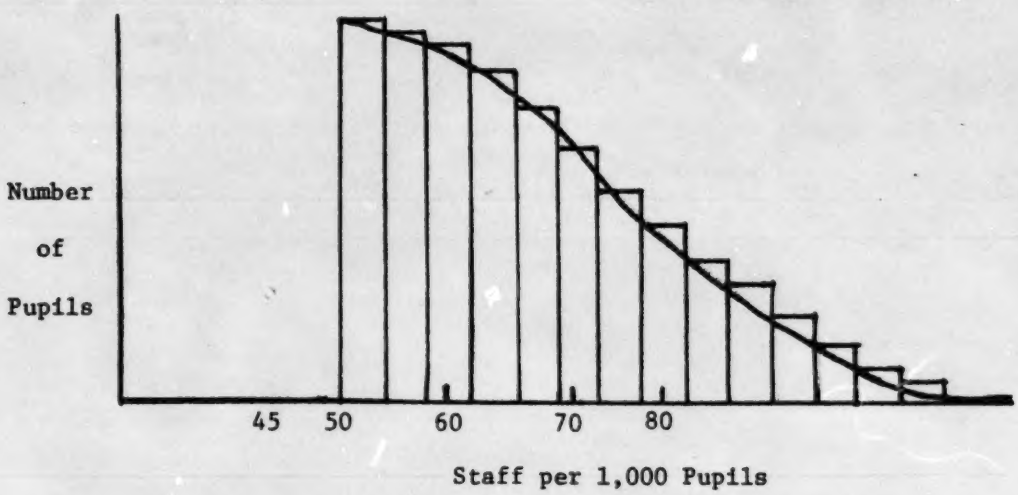
*The frequency tables and histograms are based upon staffing levels in all 577 school districts in Michigan. The trends revealed, however, are very similar to those found with the 530 K through 12 districts.

This concept, therefore, is clearly distinguishable from both equity and equality. Excellence does not imply that a local district's level of resources is independent of its wealth nor does it imply equal resource levels across districts. Some idea of a resource distribution satisfying this criterion can be gained from inspection of the staffing histogram (Figure 2, page 21). As we can see, a very large number of students fall within interval six, which represents between 50 and 52 non-categorical instructional and instructional support staff per thousand pupils. If this staffing level were adopted as a base level of staff adequacy and all districts required to maintain at least 50 staff per thousand pupils with no maximum staffing level specified, the distribution could become approximately as follows:



Since all school districts would be at or above the prescribed standard of 50 staff per thousand pupils, the system would conform to the model of excellence, at least according to this single indicator. However, the system may or may not conform to the concept of equity and clearly does not conform to the concept of equality.

Conclusions

From the analysis above, it is clear that any of the alternative model systems may be achieved at the exclusion of the other two. A normative choice, therefore, must be made among these alternative models. Moreover, this choice cannot be made until a more fundamental choice has been made: What is it that we wish to distribute equitably, equally, or so as to ensure excellence for every district?

This paper has discussed the distribution of a broad segment of school district staff. Certainly, another possibility is school district expenditures, perhaps a more widely accepted standard of quality. Other "yardsticks" may suggest themselves as the analyses continue. A basic point is this: Contradictions may arise among the alternative normative concepts because of the conditions we attach to them. Once a particular norm is adopted, the comparative quality of local educational programs will depend upon the yardstick adopted. In choosing a particular norm and a particular yardstick, sacrifices must be made. The inevitable trade-offs should be made clear in the course of the research project.

APPENDIX
SCHOOL DISTRICT STAFFING LEVELS

	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	Change	Percent
Principals	3,367	3,378	3,408	3,355	3,369	3,358	-9	-0.3%
Assistant Principals	1,414	1,451	1,495	1,465	1,479	1,442	28	2.0%
Consultants	1,354	1,533	1,381	1,424	1,276	1,167	-187	-13.8%
Supervisors		581	620	618	905	833	252	43.4%
Subtotal	6,135	6,943	6,904	6,862	7,029	6,800	665	10.8%
Classroom Teachers								
Pre-Kindergarten	287	396	352	410	249	270	-17	-5.9%
Kindergarten	3,344	3,381	3,369	3,235	2,950	2,894	-450	-13.5%
Elementary	39,663	41,126	38,135	36,140	32,854	32,004	-7659	-19.3%
Secondary	42,150	43,840	42,452	41,817	40,055	38,195	-3955	-9.4%
Special Education	5,327	5,378 [11]	5,429	5,850	5,836	6,269	942	17.7%
Other Classroom Teachers	--	--	--	--	11,043	11,054	--	--
Subtotal	90,771	94,121	89,737	87,452	92,977 [3]	90,686 [6]	-85	-0.1%
Other Teachers	658	1,738	1,727	1,654	678	843	185	28.1%
Librarians	1,978	1,974	1,959	1,894	1,846	1,845	-133	-6.7%
Guidance	3,007	3,157	3,179	3,017	3,093	3,063	56	1.9%
Psychological	308	388	391	446	462	493	185	60.1%
Audio Visual	137	153	194	183	201	232	95	69.3%
Subtotal	6,089	7,410	7,450	7,194	6,274	16,476	387	6.4%
Total Professional Instruction	102,994	108,474	104,091	101,508	106,280	103,962	968	0.9%
Teacher Aides	9,604	10,712	11,831	11,306	10,882	11,426	1,822	19.0%
Library Aides	1,445	1,629	1,705	1,674	1,596	1,620	175	12.1%
Clerical Aides	5,372	5,659	5,867	5,531	5,503 [1]	5,445 [2]	73	1.4%
Total Nonprofessional Instruction	16,421	18,000	19,403	18,611	17,981	18,491	2,070	12.6%
GRAND TOTAL INSTRUCTIONAL	119,415	126,474	123,494	120,119	124,261	122,453	3,038	2.5%
Administrators	1,861	2,093	2,188	2,173	1,545 [4]	1,588 [5]	-273	-14.7%
Health	377	434	388	370	395	407	30	8.0%
Social Work - Attendance	837	919	956	958	984	999	162	19.4%
Other	418	343	375	387	2,775 [9]	2,855 [10]	2,437	583.0%
Total Professional Noninstructional	3,493	3,789	3,907	3,888	5,699	5,849	2,356	67.4%
Health Aides	74	60	64	68				
Food Service								
Multi-Unit Directors	335	343	382	377	363	390	55	16.4%
Single Unit Mgrs.	1,256	1,327	1,337	1,274	1,290	1,294	38	3.0%
Other (cooks, etc.)	6,660	6,574	6,697	6,834	6,874	7,225	556	8.3%
Lunchroom Aides	3,417	3,753	4,125	4,113	3,901	3,995	578	16.9%
Total Food Service	11,751	12,057	12,605	12,598	12,428	12,904	1,153	9.8%
Transportation	10,973	11,435	11,839	12,150	12,288	12,204	1,231	11.2%
Other (custodians, etc.)	24,708	25,260	26,249	26,000	29,613 [7]	29,492 [8]	4,784	19.4%
Total Nonprofessional Noninstructional	47,432	48,752	50,693	50,816	54,329	54,600	7,168	15.1%
GRAND TOTAL NONINSTRUCTIONAL	50,925	52,541	54,600	54,704	60,028	60,449	9,524	18.7%
GRAND TOTAL	170,340	179,015	178,094	174,823	184,289	182,902	12,562	7.4%
Enrollments	2,157,875	2,137,263	2,127,917	2,081,936	2,034,559	1,969,047 [2]	-188,828	-8.8%

SOURCE: Fourth Friday Reports

APPENDIX A: NOTES

1.	Includes:	Other A 2-B	669
		Other Aides A 4-B	1,190
		Secretary - Clerical A 4-C	3,236
		Other Instr. Support A 4-D	408
			5,503
2.	Includes:	Other A 2-B	1,111
		Other Aides A 4-B	1,293
		Secretary - Clerical A 4-C	2,772
		Other Instr. Support A 4-D	269
			5,445
3.	Includes:	A. 1.G. Comp. Ed.	2,147
		A. 1.H. Vocational Ed.	
		(1) Fed./State Reimbursed	2,948
		(2) Other	2,652
		A. 1.I. Adult/Continuing Ed.	3,286
4.	Includes:	B. 1.A. (1) Superintendents	537
		(2) Dep. Assoc. & Assistants, Superintendents	397
		(3) Other Executive Administrators	611
			1,545
5.	Includes:	B. 1.A. (1) Superintendents	531
		(2) Dep. Assoc. & Assistants, Superintendents	397
		(3) Other Executive Administrators	667
			1,588
6.	Includes:	A. 1.G. Comp. Ed.	2,741
		H. Vocational Ed.	
		(1) Fed./State Reimbursed	2,769
		(2) Other	2,480
		I. Adult/Continuing Ed.	3,064
7.	Includes:	B. 2.B. Oper. & Maintenance Staff	17,575
		D. Data Processing Staff	308
		E. Secretary & Clerical	9,233

		F. Other Non-instructional, Nonprofessional	2,497
			29,613
8. Includes:	B. 2.B.	Oper. & Maintenance	17,700
	D.	Data Processing	251
	E.	Secretary & Clerical	9,507
	F.	Other Non-instructional, Nonprofessional	2,034
			29,492
9. Includes:	A. 3.A	(5) Speech and Audiology	755
		(7) Other Pupil Services	407
	B. 1.C.	Fiscal Service Staff	580
	D.	Data Processing Staff	115
	E.	Other	898
			2,775
10. Includes:	A. 3.A.	(5) Speech and Audiology	703
		(7) Other Pupil Services	395
	B. 1.C.	Fiscal Service Staff	588
	D.	Data Processing Staff	113
	E.	Other	1,056
			2,855

11. Estimate: Average of 1973-74 and 1975-76 Figures

12. Unaudited Count

APPENDIX B: STAFFING LEVEL FREQUENCIES

Pupil Count by SEV District Group

Staffing Ratio Interval	SEV Per Pupil ≤ $40,000		$40,000 < SEV Per Pupil ≤ $55,000		SEV Per Pupil > $55,000	
	Count	Cumulative %	Count	Cumulative %	Count	Cumulative %
0 - 41.99	32,601	1.9%	146	.1%	184	.2%
42.00 - 44.99	62,084	5.4%	2,206	1.5%	0	.2%
45.00 - 47.99	183,942	15.9%	9,066	7.3%	0	.2%
48.00 - 50.99	425,325	40.1%	14,903	16.8%	8,754	7.9%
51.00 - 53.99	232,304	53.4%	26,433	33.7%	8,442	15.4%
54.00 - 56.99	237,391	66.9%	27,803	51.4%	2,697	17.7%
57.00 - 59.99	157,023	75.9%	32,057	71.9%	5,842	22.9%
60.00 - 62.99	125,967	83.0%	14,689	81.3%	36,767	55.4%
63.00 - 65.99	133,003	90.6%	7,411	86.0%	10,132	64.3%
66.00 - 68.99	21,127	91.8%	19,343	98.4%	5,220	68.9%
69.00 - 71.99	41,022	94.2%	1,350	99.2%	10,803	78.5%
72.00 - 74.99	56,966	97.4%	255	99.4%	12,229	89.3%
75.00 and over	45,318	100.0%	941	100.0%	12,115	100.0%
Total	1,754,073		156,603		113,185	